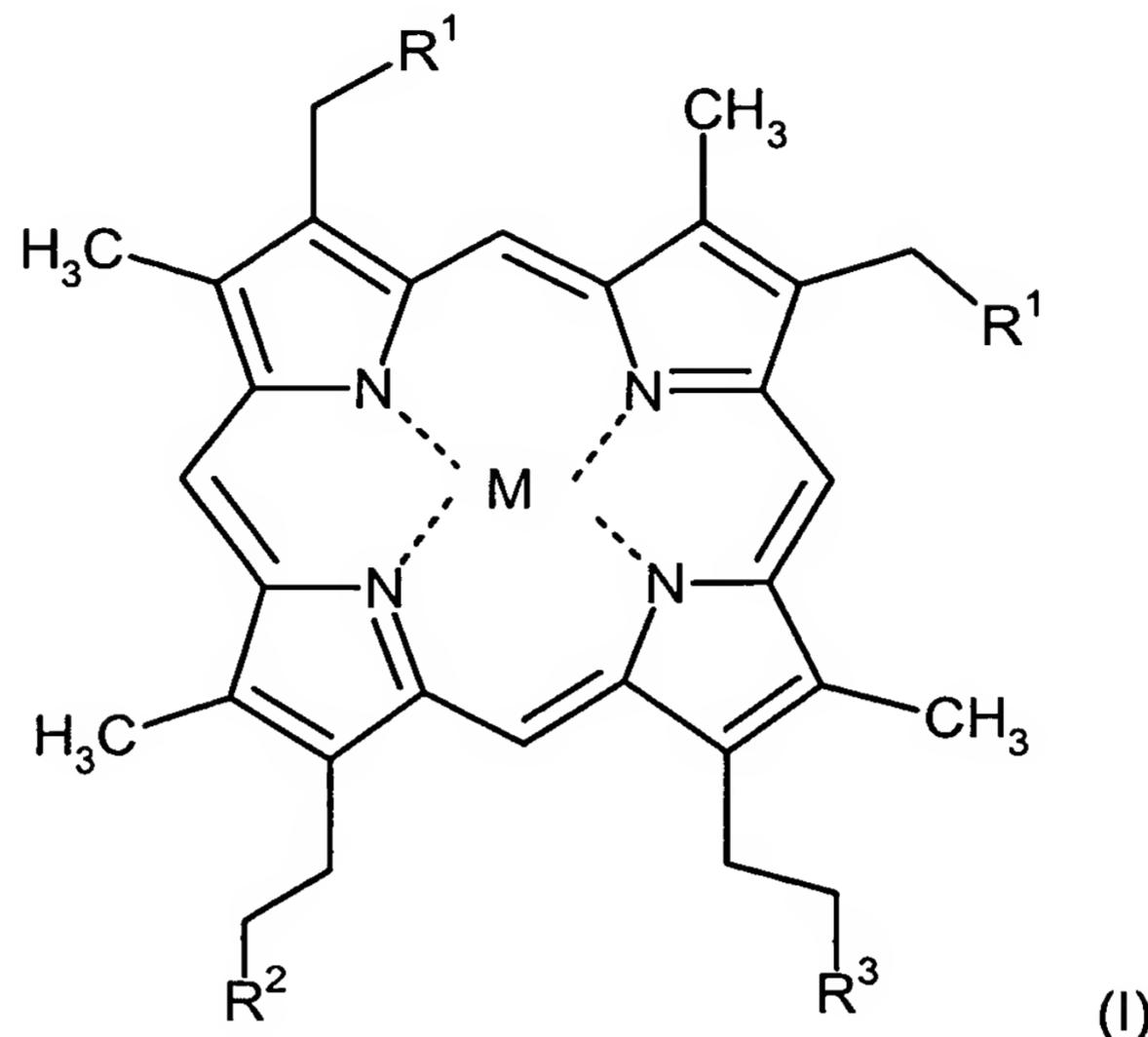


Claims

1. Use of a porphyrin complex that consists of a ligand of general formula I



as well as at least one ion of an element of atomic numbers 20-32, 37-39, 42-51 or 57-83, in which

M stands for a paramagnetic ion,

R¹ stands for a hydrogen atom, for a straight-chain C₁-C₆-alkyl radical, a C₇-C₁₂-aralkyl radical or for a group OR', in which

R' is a hydrogen atom or a C₁-C₃-alkyl radical,

R² stands for R³, a group -CO-Z or a group -(NH)₀-(A)_q-NH-D, in which

Z is a group -OL, with L meaning an inorganic or organic cation or a C₁-C₄-alkyl radical,

A means a phenylenoxy group or a C₁-C₁₂-alkylene group or a C₇-C₁₂ aralkylene group that is interrupted by one or more oxygen atoms,

o and q , independently of one another, mean the number 0 or 1, and
 D means a hydrogen atom or a group $-CO-A-(COOL)_o-(H)_m$, with
 m equal to 0 or 1, provided that the sum of m and o is equal to 1,

R^3 stands for a group $-(C=Q)(NR^4)_o-(A)_q-(NR^5)-K$,

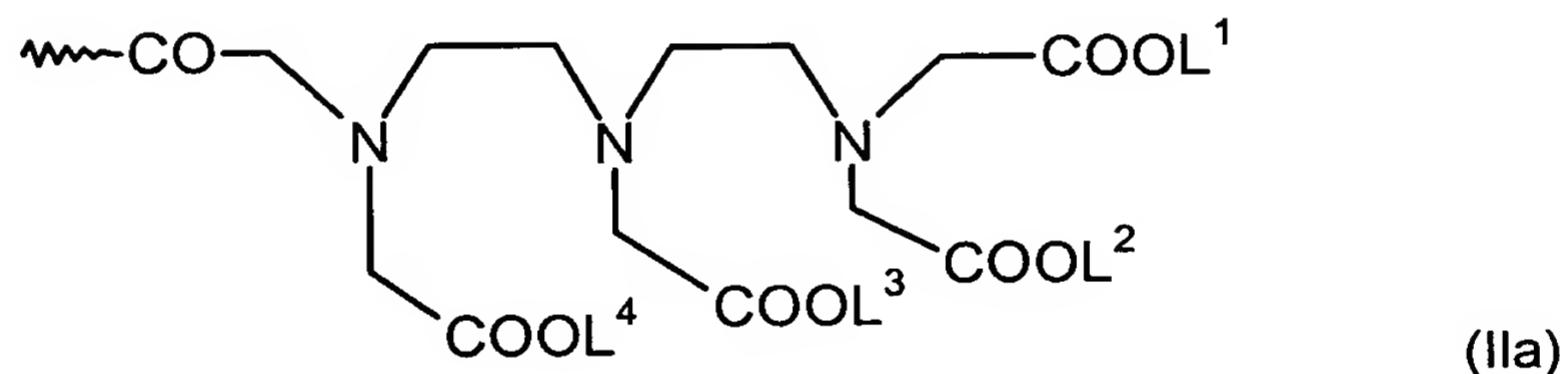
in which Q stands for an oxygen atom or for two hydrogen atoms,

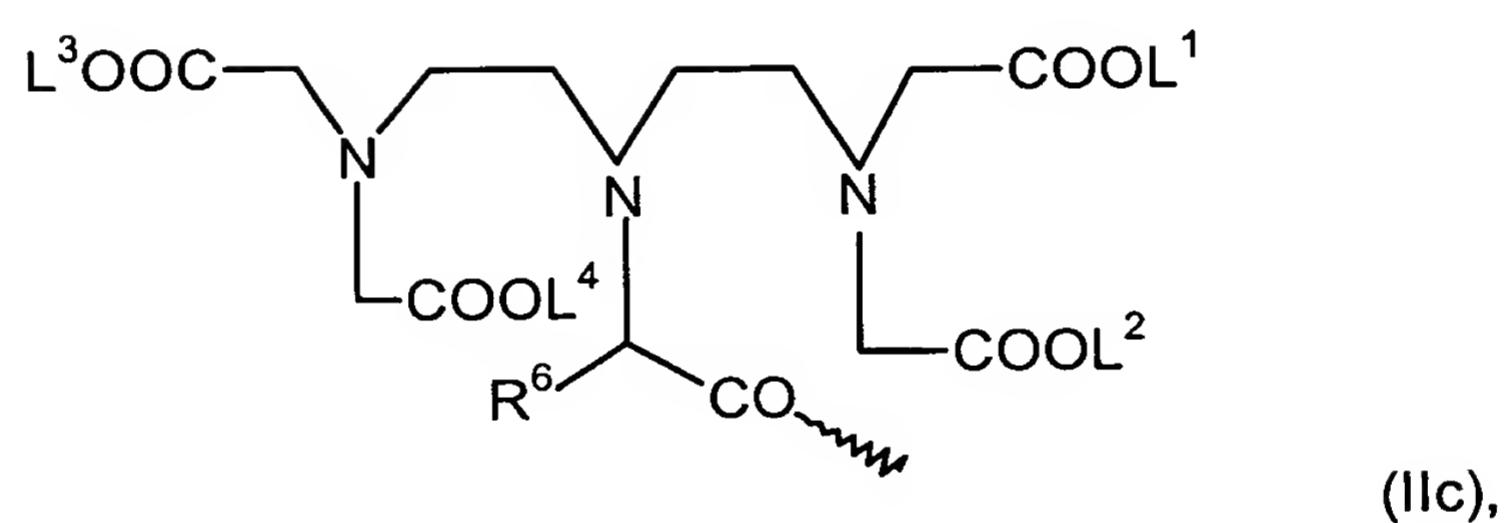
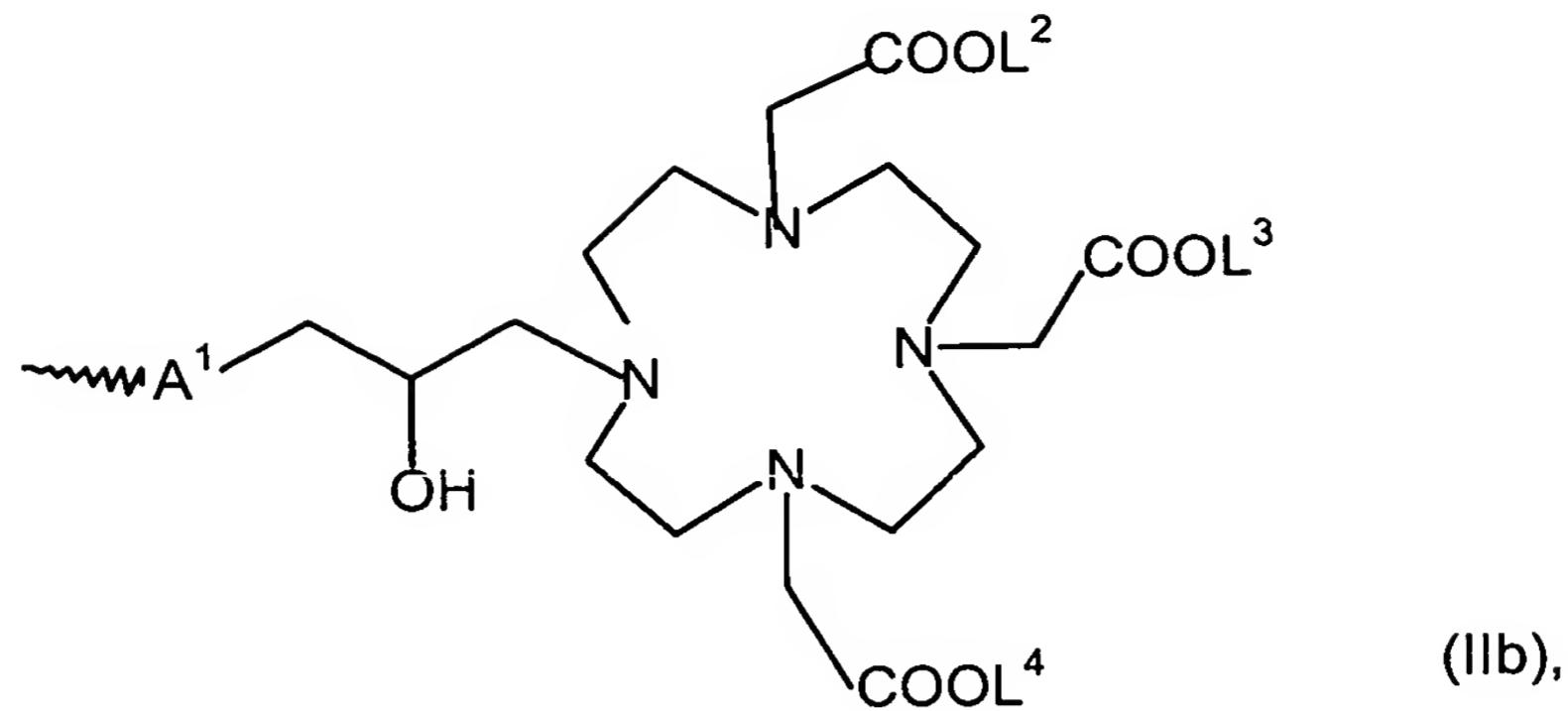
R^4 means a group $-(A)_q-H$, and

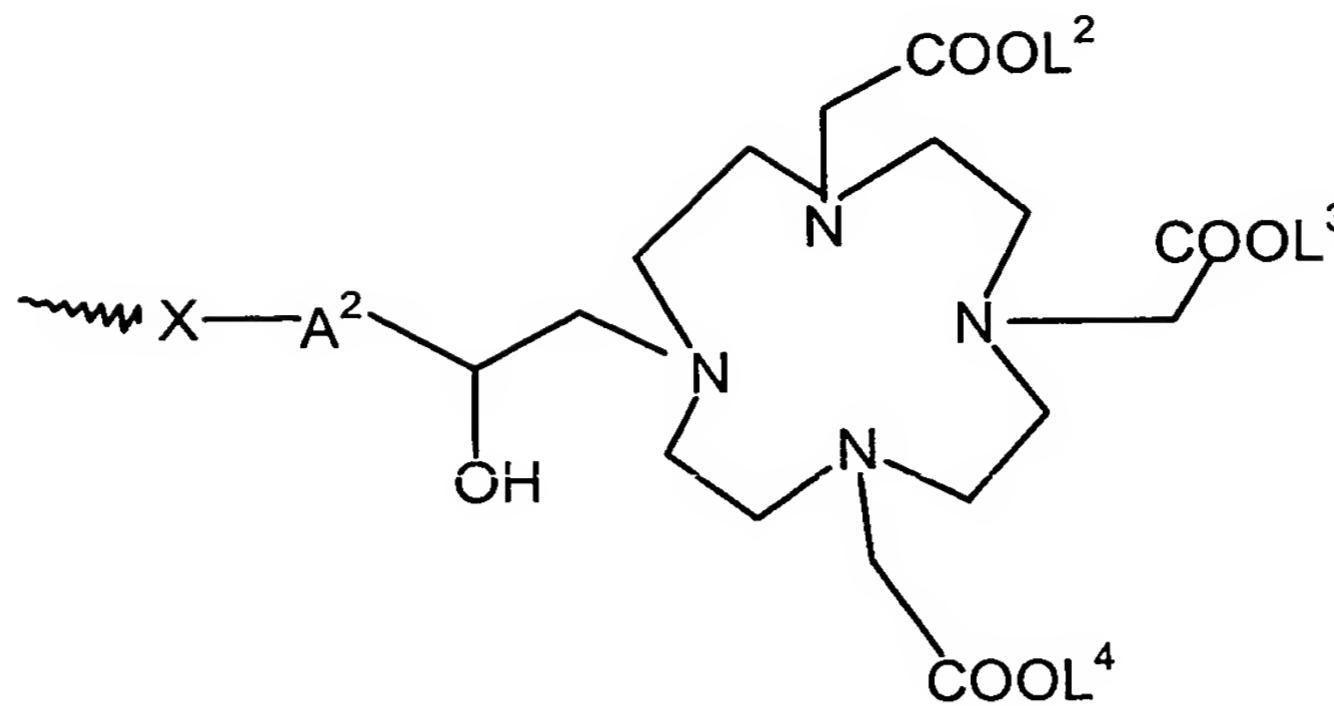
K means a complexing agent of general formula (IIa), (IIb), (IIc), (IId) or
(IIe), whereby R^5 , for the case that K is a complexing agent of formula
(IIa), has the same meaning as R^4 , and R^5 , for the case that K is a
complexing agent of formula (IIb), (IIc), (IId) or (IIe), has the same
meaning as D ,

provided that a direct oxygen-nitrogen bond is not allowed,

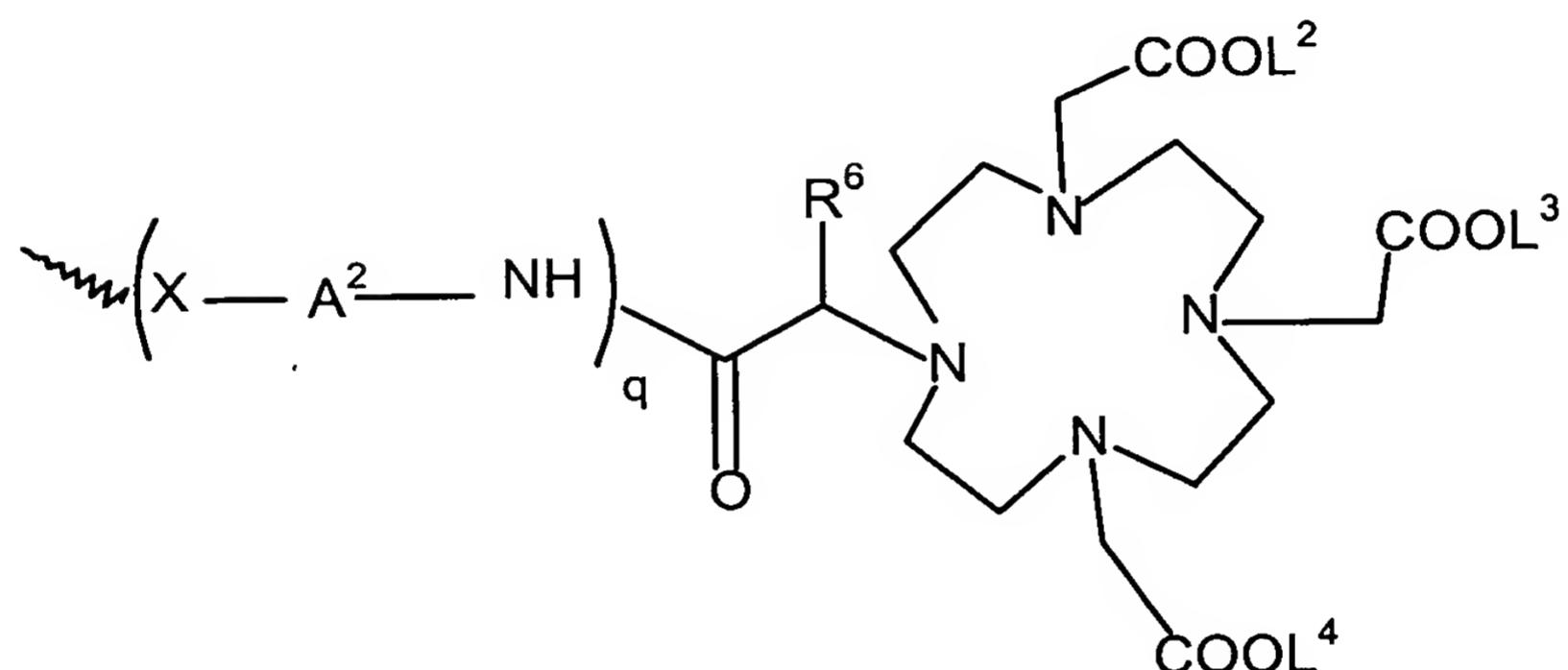
and K stands for a complexing agent of general formula (IIa), (IIb), (IIc),
(IId), (IIe) or (IIf)



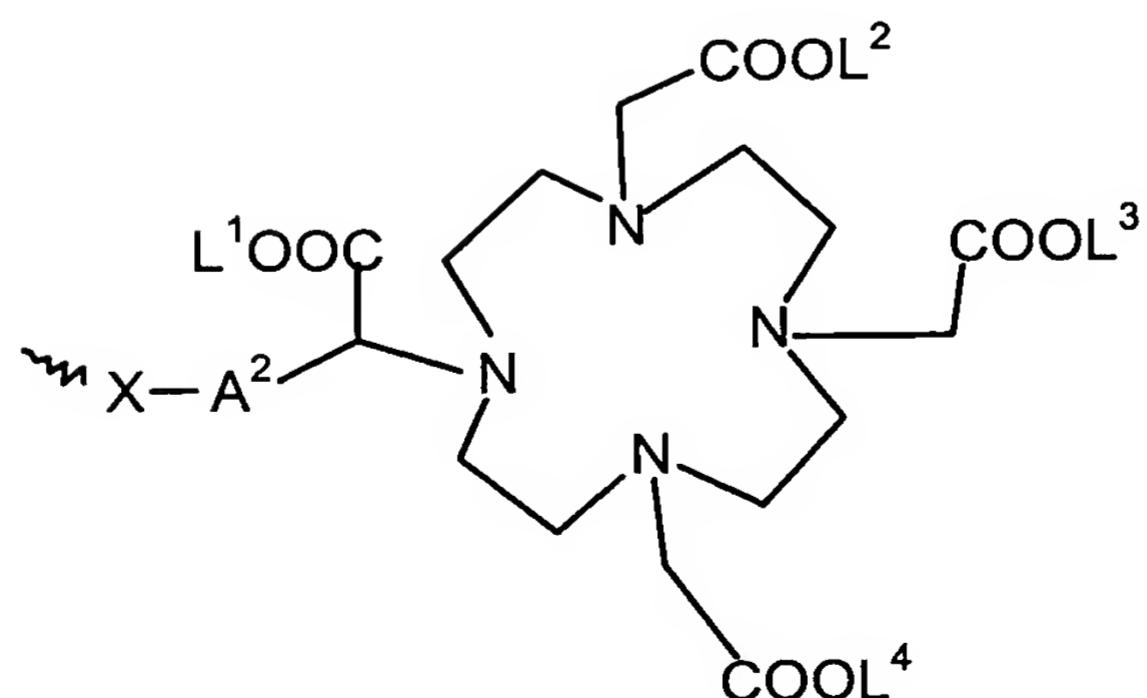




(IId),



(IIe),



(IIIf)

in which

q has the above-indicated meaning,
A¹ has the meaning that is indicated for A,
R⁶ stands for a hydrogen atom, a straight-chain or branched C₁-C₇-alkyl group, a phenyl group or a benzyl group,
A² stands for a phenylene-, -CH₂-NHCO-CH₂-CH(CH₂COOH)-C₆H₄-β-, -C₆H₄-O-(CH₂)₀₋₅-β, or -C₆H₄-(OCH₂CH₂)₀₋₁-N(CH₂COOH)-CH₂-β group, or a C₁-C₁₂-alkylene group or a C₇-C₁₂-alkylene group that is optionally interrupted by one or more oxygen atoms, 1 to 3 -NHCO groups, or 1 to 3 -CONH groups, and/or substituted with 1 to 3 (CH₂)₀₋₅COOH groups, whereby β stands for the binding site to X,
X stands for a -CO- or NHCS-group, and
L¹, L², L³ and L⁴, independently of one another, stand for a hydrogen atom or a metal ion equivalent of an element of the above-mentioned atomic number, provided that at least two of these substituents stand for metal ion equivalents and that other anions are present to compensate for optionally present charges in the metalloporphyrin, and in which free carboxylic acid groups that are not required for complexing can also be present as salts with physiologically compatible inorganic and/or organic cations or as esters or as amides, for the production of a pharmaceutical agent for treatment and prophylaxis of radical-mediated cell injuries.

2. Use of the porphyrin complexes according to claim 1 for the production of a pharmaceutical agent for the treatment and prophylaxis of diseases that are caused by peroxynitrite-mediated reactions and that are weakened and/or treated by the increase in the conversion rate of peroxynitrite.

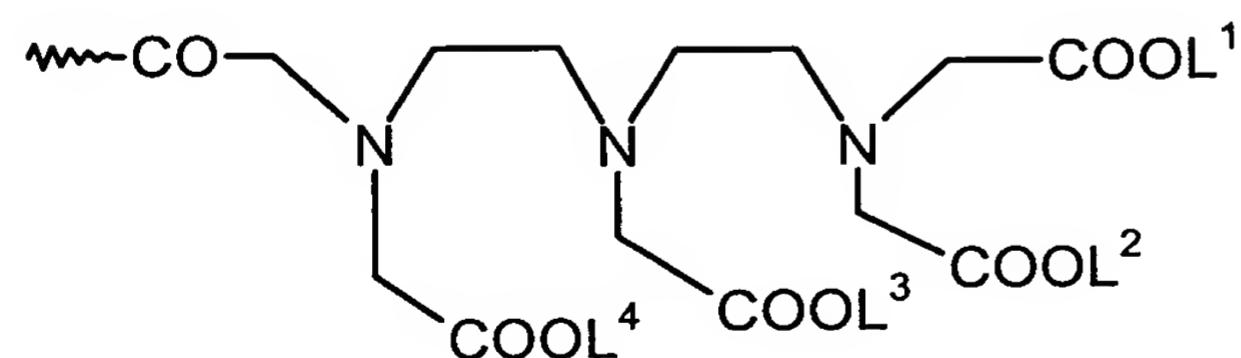
3. Use of the porphyrin complexes according to claim 1 or 2 for the treatment and prophylaxis of diseases that comprise the group of the following diseases: ischemic reperfusion diseases, such as, e.g., stroke, head trauma and myocardial ischemia, sepsis, chronic or acute inflammation (such as, e.g., arthritis or inflammatory intestinal disease), adult respiratory stress syndrome, cancer, bronchio-pulmonary dysplasia, cardiovascular diseases, diabetes, multiple sclerosis, Parkinson's disease, familial amyotrophic lateral sclerosis and colitis and special neuronal diseases.

4. Use of the porphyrin complexes of general formula I according to claim 1, characterized in that M stands for an Fe^{3+} , Mn^{3+} , Cu^{2+} , Co^{3+} , VO^{2-} , Cr^{3+} or Ni^{2+} ion.

5. Use of the porphyrin complex compounds of general formula I according to claim 1 or 4, wherein R^2 and R^3 in each case stand for a $-\text{CONHNHK}$, $-\text{CONH}(\text{CH}_2)_2\text{NHK}$, $-\text{CONH}(\text{CH}_2)_3\text{NHK}$, $-\text{CONH}(\text{CH}_2)_4\text{NHK}$, or $-\text{CONH}(\text{CH}_2)_2\text{O}(\text{CH}_2)_2\text{NHK}$ group.

6. Use of the porphyrin complexes according to claim 1, 4 or 5, wherein R^2 and R^3 in each case stand for a $-\text{CONHNHK}$.

7. Compounds according to claim 6, wherein K is a complexing agent of general formula (IIa)



8. Use of the porphyrin complex compounds according to formula 1 of claim 1, namely

{mu-[{16,16'-[Chloromanganese(III)-7,12-diethyl-3,8,13,17-tetramethylporphyrin-2,18-diyl]-bis[3,6,9-tris(carboxymethyl)-11,14-dioxo-3,6,9,12,13-pentaazahexadecanoato]}(8-)]}digadolinato(2-), -disodium,

{mu[{16,16'-[chloroiron(III)-7,12-diethyl-3,8,13,17-tetramethylporphyrin-2,18-diyl]-bis[3,6,9-tris(carboxymethyl)-11,14-dioxo-3,6,9,12,13-pentaazahexadecanoato]}-(8-)]}-digadolinato(2-), -disodium,

{mu[{16,16'-[copper(II)-7,12-diethyl-3,8,13,17-tetramethylporphyrin-2,18-diyl]-bis[3,6,9-tris(carboxymethyl)-11,14-dioxo-3,6,9,12,13-pentaazahexadecanoato]}(8-)]}-digadolinato(2-), -disodium

9. Use of the porphyrin complexes of general formula I according to claim 1 for the diagnosis of diseases that comprise the following groups:

- a. Ischemic reperfusion diseases
- b. Acute and chronic inflammatory diseases
- c. Autoimmune diseases
- d. Neurodegenerative and neuroregenerative diseases.